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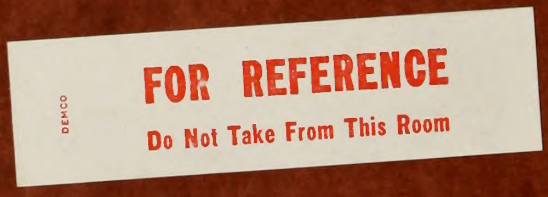

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CHILDREN'S EVALUATION OF THE DIFFICULTY OF WELL-LIKED SCHOOL SUBJECTS

A Phase of the Research Project

Subject Preferences of Fifth-Grade Children

Submitted by

Katherine Mary Kinsley

(B.S. in Ed., Boston University, 1926)

In Partial Fulfillment

of the Requirements for the Degree

Master of Education

August 1948

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Third reader: Helen A. Murphy, Associate Professor of Education

Subject Preferences of Fifth Grade Children

"Subject Preferences of Fifth Grade Children" is a cooperative study in which a number of graduate students have contributed to the total research project. It was facilitated through the cooperation of the New England School Development Council. This thesis is one of the studies in the project. Those completed and filed as graduate studies in June and August, 1948 were:

1. Subject Preferences in the Fifth Grade by Helen C. Blanchard
2. The Reliability of the Check List Used in the Study by Francis L. Thompson
3. An Analysis of Sex Differences in Fifth-Grade Children's Preferences for School Subjects by Eleanor M. Skahill
4. Preferences for Content, Skills, and Aesthetic Subjects in Five Communities by Ado Commito
5. Children's Evaluation of the Difficulty of Well-Liked School Subjects by Katherine M. Kinsley
6. Children's Evaluation of the Difficulty of Disliked School Subjects by Esther M. Sullivan
7. An Analysis of Fifth-Grade Pupils' Subject Preferences in Relation to Their Teachers' Preferences by Helen M. Sprague
8. High Morale Classrooms in the Subject Preference Study by George H. Englesby
9. An Analysis of the Influences of Intelligence and Age Differences Upon Fifth-Grade Children's Preferences for School Subjects by William L. Earley, Jr.

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7. An Analysis of Fifth-Grade Pupils' Subject Preferences in Relation to Their Teachers' Preferences by Helen M. Sprague

8. Eight Normal Classrooms in the Subject Preference Study by George H. Bugbee

9. An Analysis of the Influences of Intelligence and Age Differences Upon Fifth-Grade Children's Preferences for School Subjects by William B. Berry, Jr.

10. An Analysis of the Influence of Achievement on Preference for Reading and Arithmetic by Mary E. Cusack

11. Differences in Subject Preferences of High-Achievement Readers and Low-Achievement Readers by George H. Gardner

12. An Analysis of the Subject Preferences of 3,403 Third, Fourth, Fifth, and Sixth Grade Pupils in the Public Schools of Quincy, Massachusetts by Francis D. Mills

13. Techniques and Practices Used in Twenty Social Studies Classrooms by William A. Wolffer

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CHILDREN'S EVALUATION OF THE DIFFICULTY OF WELL-LIKED SCHOOL SUBJECTS

Importance of the study. "Pupils are supposed to do better in those activities which they like."[1] Fryer states[2] "the subjective interests and aversions, the likes and dislikes of the individual are an important part of his mental life, the estimates by the individual of his feeling - how he feels toward a course of study. If he says he is interested, this information has been considered of value in predicting what he will do best in the future." Gale Gardner raises the question as to the advisability of forcing upon children so many activities apparently counter to their interests, desires and needs as they see them.[3]

The purpose of this study has been to determine the subjects well-liked by fifth-grade children; to find if these well-liked subjects were considered easy or hard; to find if there are significant sex differences in the well-liked subjects; and to find if there are significant differences

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1 J. Murray Lee and Dorris M. Lee, The Child and His Curriculum (New York: D. Appleton-Century Co., 1940), p. 128.

2 Douglas Fryer, The Measurements of Interests In Relation to Human Adjustment (New York: Henry Holt & Co., 1931), p. 19.

3 Gale Gardner, "A Study of Children's Interest," The Tennessee Teacher, May, 1941, p. 30.

between boys and girls as to the difficulty of the well-liked subjects.

The data used in this study were taken from the well-liked preferences for school subjects recorded on check lists by 13,483 fifth grade pupils in 65 towns and cities in New England. Each well-liked subject was checked by the pupil as to whether he thought it Easy or Hard.

After the tabulation of the data for the whole study had been completed, the total Liked Easy and Liked Hard subjects were recorded, with separate columns for boys and girls. The total Likes were found, with separate columns for boys and girls. The next step was to find the number and percentage of each well-liked subject, and then tables of comparisons were made.

In this study percentages were compared against other percentages, so the critical ratio of the difference between two percentages was used for the analysis of the data. To determine the significance of the difference between any two percentages, the formula for finding the critical ratio (CR), when the two percentages are expressed by P_1 and P_2, is:

$$CR = \frac{P_1 - P_2}{SE\ Diff_{p1\ p2}}$$

The standard error of a difference between two percentages is found by use of the formula:

between boys and girls as to the difficulty of the well-liked subjects.

The data used in this study were taken from the well-liked preferences for school subjects recorded on check lists by 10,885 fifth grade pupils in 85 towns and cities in New England. Each well-liked subject was checked by the pupil as to whether he thought it Easy or Hard.

After the tabulation of the data for the whole study had been completed, the total Liked Easy and Liked Hard subjects were recorded, with separate columns for boys and girls. The total Likes were found, with separate columns for boys and girls. The next step was to find the number and percentage of each well-liked subject, and then tables of comparisons were made.

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$$CR = \frac{P_1 - P_2}{SE_{Diff_{P_1 P_2}}}$$

The standard error of a difference between two percentages is found by use of the formula:

$$SE\ Diff_{p_1 p_2} = \sqrt{SE_{p_1}^2 + SE_{p_2}^2}$$

In reference to the critical ratio and its implications, Wert says:[4]

> Whenever this ratio is unity, the chances are 68 in 100 that the difference is too great to be the result of sampling fluctuations; whenever this ratio is two, the chances are 95 out of 100 that the difference is too great to be the result of sampling fluctuations; and, whenever the ratio is three or more, it is a practical certainty that the difference is too great to be the result of sampling fluctuations.

The numbers and percentages of all well-liked preferences for school subjects and comparisons by means of critical ratios are found in the tables that follow.

TABLE I

NUMBER AND PERCENTAGE OF WELL-LIKED SUBJECT PREFERENCES BASED ON SURVEY TOTAL OF 86,405 WELL-LIKED

Subject	Liked Easy		Liked Hard	
	Number	Per Cent	Number	Per Cent
Art	9513	11.97	806	11.53
Reading	9288	11.70	562	8.04
Spelling	9048	11.39	599	8.57
Music	8457	10.65	579	8.28
Health	7755	9.77	334	4.78

4 James E. Wert, Educational Statistics (New York: McGraw Hill Book Co., Inc., 1938), p. 145.

TABLE I
(concluded)

Subject	Liked Easy		Liked Hard	
	Number	Per Cent	Number	Per Cent
Arithmetic	6987	8.80	1102	15.76
Penmanship	6877	8.66	555	7.94
Science	6262	7.89	507	7.25
Language	4831	6.08	457	6.53
History	4288	5.40	513	7.34
Geography	3346	4.21	579	8.28
Social Studies	2761	3.48	399	5.70
Totals	79413		6992	

Table I shows the numbers and percentages of the total likes in the survey, divided into evaluative categories of Liked Easy and Liked Hard.

Art was found to be the easiest subject, and arithmetic, the hardest. It is interesting to note that under Liked Hard, art is the second hardest subject listed, with spelling coming in third. Under the Liked Easy heading, arithmetic takes sixth place, with history, geography, and social studies at the end of the list.

TABLE I
(concluded)

Subject	Liked Easy		Liked Hard	
	Number	Per Cent	Number	Per Cent
Arithmetic	6987	8.80	1102	16.76
Penmanship	6977	8.88	855	7.94
Science	6262	7.89	807	7.28
Language	4831	6.08	497	6.83
History	4288	5.40	513	7.94
Geography	3346	4.21	579	8.88
Social studies	2781	3.48	399	6.70
Totals	79412		6382	

Table I shows the numbers and percentages of the total likes in the survey, divided into qualitative categories of Liked Easy and Liked Hard.

Art was found to be the easiest subject, and arithmetic, the hardest. It is interesting to note that under Liked Hard, art is the second hardest subject listed, with spelling coming in third. Under the Liked Easy heading, arithmetic takes sixth place, with history, geography, and social studies at the end of the list.

TABLE II

NUMBER AND PERCENTAGE OF WELL-LIKED SUBJECT PREFERENCES BASED ON SURVEY TOTAL OF 79,413 LIKED EASY ACCORDING TO PREFERENCES OF BOYS AND GIRLS

Subject	Boys		Girls	
	Number	Per cent	Number	Per cent
Art	4813	12.46	4700	11.52
Reading	4530	11.73	4758	11.66
Spelling	4129	10.69	4919	12.06
Health	3838	9.94	3917	9.60
Music	3562	9.22	4895	12.00
Arithmetic	3506	9.08	3481	8.53
Science	3430	8.88	2832	6.94
Penmanship	2969	7.69	3908	9.58
History	2384	6.17	1904	4.67
Language	1961	5.08	2870	7.04
Geography	1896	4.91	1450	3.56
Social Studies	1604	4.15	1157	2.84
Total	38622		40791	

Table II shows that the boys found art the easiest subject, and the girls found spelling, with art taking fourth place. Arithmetic has sixth place on the boys' list, and seventh place on the girls' list. The boys and girls place geography and the social studies at the end of their preferences.

TABLE II

NUMBER AND PERCENTAGE OF WELL-LIKED SUBJECT PREFERENCES
BASED ON SURVEY TOTAL OF 79,413 LIKED BASY
ACCORDING TO PREFERENCES OF BOYS AND GIRLS

Subject	Boys		Girls	
	Number	Per cent	Number	Per cent
Art	4818	12.46	4700	11.82
Reading	4550	11.76	4758	11.86
Spelling	4128	10.69	4919	12.36
Health	3658	9.46	3817	9.60
Music	3682	9.52	4978	12.00
Arithmetic	3606	9.08	3441	8.65
Science	3430	8.88	2832	6.94
Penmanship	2769	7.69	3908	9.88
History	2394	6.17	1904	4.87
Language	1961	5.08	2870	7.04
Geography	1895	4.91	1430	3.66
Social Studies	1804	4.18	1157	2.34
Total	38622		40791	

Table II shows that the boys found art the easiest subject, and the girls found spelling, with art taking fourth place. Arithmetic has sixth place on the boys' list, and seventh place on the girls' list. The boys and girls place geography and the social studies at the end of their preferences.

TABLE III

NUMBER AND PERCENTAGE OF WELL-LIKED SUBJECT PREFERENCES BASED ON SURVEY TOTAL OF 6992 LIKED HARD

Subject	Boys		Girls	
	Number	Per cent	Number	Per cent
Arithmetic	578	14.76	524	17.04
Spelling	382	9.75	217	7.06
Art	378	9.65	428	13.92
Reading	343	8.76	219	7.12
Geography	327	8.35	252	8.20
Music	326	8.32	253	8.23
Penmanship	322	8.22	233	7.58
Language	278	7.10	179	5.82
History	277	7.07	236	7.67
Science	275	7.02	232	7.54
Social Studies	216	5.51	183	5.95
Health	215	5.49	119	3.87
Total	3917		3075	

According to Table III arithmetic was found to be the hardest subject by both girls and boys among the Liked Hard subjects. The boys found spelling the second hardest subject while the girls found spelling the ninth hardest subject. The boys put language in eighth place while the girls considered language their eleventh hardest subject. The boys and girls both place health at the end of their lists.

TABLE III

NUMBER AND PERCENTAGE OF WELL-LIKED SUBJECT PREFERENCES
BASED ON SURVEY TOTAL OF 6952 LIKED HARD

Subject	Boys		Girls	
	Number	Per cent	Number	Per cent
Arithmetic	578	14.76	524	17.04
Spelling	382	9.75	217	7.06
Art	378	9.65	468	15.22
Reading	343	8.76	218	7.12
Geography	327	8.35	252	8.20
Music	326	8.32	256	8.33
Penmanship	322	8.22	223	7.26
Language	278	7.10	179	5.82
History	277	7.07	226	7.37
Science	276	7.05	232	7.54
Social Studies	216	5.51	163	5.30
Health	215	5.49	119	3.87
Total	3917		3075	

According to Table III arithmetic was found to be the hardest subject by both girls and boys among the Liked Hard subjects. The boys found spelling the second hardest subject while the girls found spelling the ninth hardest subject. The boys put language in eighth place while the girls considered language their eleventh hardest subject. The boys and girls both place health at the end of their lists.

TABLE IV

NUMBER AND PERCENTAGE OF WELL-LIKED SUBJECT PREFERENCES BASED ON THE SURVEY TOTAL OF 86,405 WELL LIKED DIVIDED ACCORDING TO BOYS' AND GIRLS' PREFERENCES

Subject	Boys		Girls		Total	
	No.	Per cent	No.	Per cent	No.	Per cent
Art	5191	12.20	5128	11.69	10319	11.94
Reading	4873	11.45	4977	11.35	9850	11.40
Spelling	4511	10.60	5136	11.70	9647	11.17
Music	3888	9.14	5148	11.73	9036	10.46
Arithmetic	4084	9.60	4005	9.15	8089	9.36
Health	4053	9.53	4036	9.20	8089	9.36
Penmanship	3291	7.76	4141	9.44	7432	8.60
Science	3705	8.71	3064	6.98	6769	7.83
Language	2239	5.26	3049	6.95	5288	6.12
History	2661	6.25	2140	4.88	4801	5.56
Geography	2223	5.22	1702	3.88	3925	4.54
Soc.Studies	1820	4.28	1340	3.05	3160	3.66
Total	42539		43866		86405	

In Table IV the subjects are listed in order of combined preferences, with art taking first place, and the social studies at the end. Both boys and girls place geography and the social studies at the end of their lists, the only two subjects which they place in parallel position.

TABLE IV

NUMBER AND PERCENTAGE OF TOTAL DISLIKED SUBJECT PREFERENCES
BASED ON THIS SURVEY TOTAL OF 86,400 WHOLE LIKED
DIVIDED ACCORDING TO BOYS' AND GIRLS' PREFERENCES

Subject	Boys		Girls		Total	
	No.	Per cent	No.	Per cent	No.	Per cent
Art	5191	12.20	5122	11.89	10313	11.94
Reading	4973	11.46	4977	11.55	9950	11.40
Spelling	4311	10.60	5136	11.70	9447	11.17
Music	3888	9.14	5148	11.73	9036	10.46
Arithmetic	4084	9.60	4005	9.15	8089	9.36
Health	4053	9.53	4036	9.20	8089	9.36
Penmanship	3291	7.76	4141	9.44	7432	8.60
Science	3706	8.71	3084	8.98	6769	7.83
Language	2539	5.96	3049	6.95	5588	6.12
History	3661	6.25	2140	4.88	4801	5.56
Geography	2223	5.22	1702	3.84	3925	4.54
Soc. Studies	1890	4.28	1340	3.06	3160	3.66
Total	42539		43886		86406	

In Table IV the subjects are listed in order of combined preferences, with art taking first place, and the social studies at the end. Both boys and girls place geography and the social studies at the end of their lists, the only two subjects which they place in parallel position.

ORDER OF PREFERENCES
(From Table IV)

6932 Boys		6551 Girls	
Art	5191	Music	5148
Reading	4873	Spelling	5136
Spelling	4511	Art	5128
Arithmetic	4084	Reading	4977
Health	4053	Penmanship	4141
Music	3888	Health	4036
Science	3705	Arithmetic	4005
Penmanship	3291	Science	3064
History	2661	Language	3049
Language	2239	History	2140
Geography	2223	Geography	1702
Social Studies	1820	Social Studies	1340

TABLE V

A COMPARISON OF RANK ORDER OF SUBJECTS BASED ON COMBINED FIRST, SECOND, AND THIRD CHOICES OF PUPILS WITH THE RANK ORDER OF SUBJECTS BASED ON THE NUMBER OF TIMES CHECKED AS WELL-LIKED

Combined Subjects*			Subjects Checked as Well-Liked		
Subject	No.	Per cent	Subject	No.	Per cent
Reading	7177	17.74	Art	10319	11.94
Arithmetic	6811	16.84	Reading	9850	11.40
Art	5875	14.52	Spelling	9647	11.17
Spelling	5356	13.24	Music	9036	10.46
Music	4594	11.35	Arithmetic	8089	9.36
History	2236	5.53	Health	8089	9.36

* See p.

ORDER OF PREFERENCES
(From Table IV)

6932 Boys		6861 Girls	
Art	8191	Music	8148
Reading	4878	Spelling	8136
Spelling	4611	Art	8128
Arithmetic	4084	Reading	4977
Health	4053	Penmanship	4141
Music	3886	Health	4036
Science	3705	Arithmetic	4006
Penmanship	3291	Science	3064
History	2851	Language	3049
Language	2839	History	2140
Geography	2225	Geography	1702
Social Studies	1820	Social Studies	1340

TABLE V

A COMPARISON OF RANK ORDER OF SUBJECTS BASED ON COM-
BINED FIRST, SECOND, AND THIRD CHOICES OF PUPILS
WITH THE RANK ORDER OF SUBJECTS BASED ON THE
NUMBER OF TIMES CHOSEN AS WELL-LIKED

Combined Subjects*			Subjects Checked as Well-Liked		
Subject	No.	Per cent	Subject	No.	Per cent
Reading	7177	17.74	Art	10319	11.84
Arithmetic	6811	16.84	Reading	9850	11.40
Art	5876	14.52	Spelling	9647	11.17
Spelling	5356	13.24	Music	9038	10.46
Music	4594	11.35	Arithmetic	8089	9.36
History	2236	5.53	Health	8089	9.36

* See p.

TABLE V
(concluded)

Combined Subjects			Subjects Checked as Well-Liked		
Subject	No.	Per cent	Subject	No.	Per cent
Science	2086	5.16	Penmanship	7432	8.60
Soc. Studies	1573	3.89	Science	6769	7.83
Geography	1419	3.51	Language	5288	6.12
Health	1346	3.33	History	4801	5.56
Penmanship	1338	3.31	Geography	3925	4.54
Language	638	1.58	Soc. Studies	3160	3.66
Total	40449		Total	86405	

In Table V it will be noted that there is a difference in rank order of popularity of subjects dependent upon the basis of evaluation. When pupils rank first, second, and third choices of subjects that are favorites and then the combined choices for each subject are considered we find that school subjects in order of popularity start with reading at the top and then have arithmetic, art, spelling, and music in the next four places. If we arrange subjects in the order of the number of times they are checked as well-liked art is at the top followed by reading, spelling, music, and arithmetic. As well-liked subjects the social studies are at the bottom of the list.

TABLE V
(concluded)

Combined Subjects			Subjects Checked as Well-Liked		
Subject	No.	Per cent	Subject	No.	Per cent
Science	2036	5.16	Penmanship	7432	8.60
Soc. Studies	1573	3.99	Science	6769	7.83
Geography	1419	3.61	Language	5888	6.12
Health	1246	3.38	History	4801	5.56
Penmanship	1358	3.31	Geography	3925	4.54
Language	658	1.58	Soc. Studies	3160	3.56
Total	40449		Total	86406	

In Table V it will be noted that there is a difference in rank order of popularity of subjects dependent upon the basis of evaluation. When pupils rank first, second, and third choices of subjects that are favorites and then the combined choices for each subject are considered we find that school subjects in order of popularity start with reading at the top and then have arithmetic, art, spelling, and music in the next four places. If we arrange subjects in the order of the number of times they are checked as well-liked art is at the top followed by reading, spelling, music, and arithmetic. As well-liked subjects the social studies are at the bottom of the list.

TABLE VI

CRITICAL RATIOS BETWEEN THE PERCENTAGES OF BOYS AND GIRLS CHECKING SUBJECTS AS WELL-LIKED

Subject	Number	Per cent	SE^2	Per cent DIFF.	SE DIFF.	CR
Art	B 5191	12.20	.04	.51	.2828	1.80
	G 5128	11.69	.04			
Reading	B 4873	11.45	.04	.10	.2236	.45
	G 4977	11.35	.01			
Spelling	B 4511	10.60	.04			
	G 5136	11.70	.04	1.10	.2828	3.89
Music	B 3888	9.14	.01			
	G 5148	11.73	.04	2.59	.2236	11.58
Arithmetic	B 4084	9.60	.01	.45	.1414	3.18
	G 4005	9.15	.01			
Health	B 4053	9.53	.01	.33	.1414	2.33
	G 4036	9.20	.01			
Penman-ship	B 3291	7.76	.01			
	G 4141	9.44	.01	1.68	.1414	11.88
Science	B 3705	8.71	.01	1.73	.1414	12.23
	G 3064	6.98	.01			
Language	B 2239	5.26	.01			
	G 3049	6.95	.01	1.69	.1414	11.95
History	B 2661	6.25	.01	1.37	.1414	9.69
	G 2140	4.88	.01			
Geography	B 2223	5.22	.01	1.34	.1414	9.48
	G 1702	3.88	.01			
Social Studies	B 1820	4.28	.01	1.23	.1414	8.70
	G 1340	3.05	.01			

TABLE VI

CRITICAL RATIOS BETWEEN THE PERCENTAGES OF BOYS AND GIRLS CHECKING SUBJECTS AS WELL-LIKED

Subject	Number	Per cent	$SE_{\%}$	Per cent DIFF.	SE DIFF.	CR
Art	B 5191	12.80	.04	.61	.2828	1.80
	G 5128	11.89	.04			
Reading	B 4873	11.46	.04	.10	.2238	.45
	G 4977	11.36	.01			
Spelling	B 4511	10.60	.04			
	G 5156	11.70	.04	1.10	.2828	3.89
Music	B 3888	9.14	.01			
	G 5148	11.73	.04	2.59	.2236	11.58
Arithmetic	B 4084	9.60	.01	.45	.1414	3.18
	G 4005	9.15	.01			
Health	B 4053	9.53	.01	.33	.1414	2.33
	G 4036	9.20	.01			
Penman-	B 3291	7.76	.01			
ship	G 4141	9.44	.01	1.68	.1414	11.88
Science	B 3705	8.71	.01	1.73	.1414	12.23
	G 3064	6.98	.01			
Language	B 2239	5.26	.01			
	G 3049	6.95	.01	1.69	.1414	11.95
History	B 2661	6.26	.01	1.37	.1414	8.69
	G 2140	4.89	.01			
Geography	B 2223	5.22	.01	1.34	.1414	9.48
	G 1702	3.88	.01			
Social	B 1820	4.28	.01	1.23	.1414	8.70
Studies	G 1340	3.05	.01			

In Table VI there are nine critical ratios that are statistically significant.

In art the percent difference of .51 is not significant. The critical ratio of 1.80 shows that there are 93 chances in 100 that this is a true difference in favor of the boys.

In reading the percent difference of .10 is not significant. The critical ratio of .45 shows that there are 35 chances in 100 that this is a true difference in favor of the boys.

In spelling the percent difference of 1.10 is significant. The critical ratio of 3.89 shows significance and indicates that the girls liked spelling more than the boys.

In music the percent difference of 2.59 is significant. The critical ratio of 11.58 shows significance and indicates that the girls like music more than the boys.

In arithmetic the percent difference of .45 is significant. The critical ratio of 3.18 shows significance and indicates that the boys like arithmetic more than the girls.

In health the percent difference of .33 is not significant. The critical ratio of 2.33 shows that there are 98 chances out of 100 that this is a true difference in favor of the boys.

In penmanship the percent difference of 1.68 is significant. The critical ratio of 11.88 shows significance and indicates that the girls like penmanship more than the boys.

In Table VI there are nine critical ratios that are statistically significant.

In art the percent difference of .81 is not significant. The critical ratio of 1.80 shows that there are 93 chances in 100 that this is a true difference in favor of the boys.

In reading the percent difference of .10 is not significant. The critical ratio of .45 shows that there are 55 chances in 100 that this is a true difference in favor of the boys.

In spelling the percent difference of 1.10 is significant. The critical ratio of 3.89 shows significance and indicates that the girls liked spelling more than the boys.

In music the percent difference of 2.39 is significant. The critical ratio of 11.59 shows significance and indicates that the girls like music more than the boys.

In arithmetic the percent difference of .45 is significant. The critical ratio of 3.18 shows significance and indicates that the boys like arithmetic more than the girls.

In health the percent difference of .33 is not significant. The critical ratio of 2.33 shows that there are 98 chances out of 100 that this is a true difference in favor of the boys.

In penmanship the percent difference of 1.68 is significant. The critical ratio of 11.88 shows significance and indicates that the girls like penmanship more than the boys.

In science the percent difference of 1.73 is significant. The critical ratio of 12.23 shows significance and indicates that the boys like science more than the girls.

In language the percent difference of 1.69 is significant. The critical ratio of 11.95 shows significance and indicates the girls like language more than the boys.

In history the percent difference of 1.37 is significant. The critical ratio of 9.69 shows significance and indicates that the boys like history more than the girls.

In geography the percent difference of 1.34 is significant. The critical ratio of 9.48 shows significance and indicates the boys like geography more than the girls.

In social studies the percent difference of 1.23 is significant. The critical ratio of 8.70 shows significance and indicates that the boys like the social studies more than the girls.

TABLE VII

CRITICAL RATIOS BETWEEN THE PERCENTAGES OF BOYS AND GIRLS EVALUATING WELL-LIKED SUBJECTS AS EASY IN DIFFICULTY

Subject	Number	Per cent	SE^2	Per cent DIFF.	SE DIFF.	CR
Art	B 4813	12.46	.04	.94	.2828	3.32
	G 4700	11.52	.04			
Reading	B 4530	11.73	.04	.07	.2828	.25
	G 4758	11.66	.04			

In science the percent difference of 1.75 is significant. The critical ratio of 12.25 shows significance and indicates that the boys like science more than the girls.

In language the percent difference of 1.69 is significant. The critical ratio of 11.93 shows significance and indicates the girls like language more than the boys.

In history the percent difference of 1.87 is significant. The critical ratio of 9.69 shows significance and indicates that the boys like history more than the girls.

In geography the percent difference of 1.54 is significant. The critical ratio of 9.48 shows significance and indicates the boys like geography more than the girls.

In social studies the percent difference of 1.25 is significant. The critical ratio of 8.70 shows significance and indicates that the boys like the social studies more than the girls.

TABLE VII

CRITICAL RATIOS BETWEEN THE PERCENTAGES OF BOYS AND GIRLS EVALUATING WELL-LIKED SUBJECTS AS EASY IN DIFFICULTY

Subject	Number	Per cent	SE_D	Per cent DIFF.	SE DIFF.	CR
Art	B 4813	12.46	.04	.94	.2828	3.32
	G 4700	11.52	.04			
Reading	B 4830	11.73	.04	.07	.2828	.25
	G 4758	11.66	.04			

TABLE VII
(concluded)

Subject	Number	Per cent	SE^2	Per cent DIFF.	SE DIFF.	CR
Spelling	B 4129	10.69	.04			
	G 4919	12.06	.04	1.37	.2828	4.84
Music	B 3562	9.22	.01			
	G 4895	12.00	.04	2.78	.2236	12.43
Arithmetic	B 3506	9.08	.01	.55	.1414	3.89
	G 3481	8.53	.01			
Health	B 3838	9.94	.04	.34	.2236	1.52
	G 3917	9.60	.01			
Penman-	B 2969	7.69	.01			
ship	G 3908	9.58	.01	1.89	.1414	13.37
Science	B 3430	8.88	.01	1.94	.1414	13.72
	G 2832	6.94	.01			
Language	B 1961	5.08	.01			
	G 2870	7.04	.01	1.96	.1414	13.86
History	B 2384	6.17	.01	1.50	.1414	10.61
	G 1904	4.67	.01			
Geography	B 1896	4.91	.01	1.35	.1414	9.55
	G 1450	3.56	.01			
Social	B 1604	4.15	.01	1.31	.1414	9.26
Studies	G 1157	2.84	.01			

In Table VII there are ten critical ratios that are statistically significant.

In art the percent difference of .94 is significant. The critical ratio of 3.32 shows significance and indicates

TABLE VII
(concluded)

Subject	Number	Per cent	SE_s	Per cent DIFF.	$SE_{DIFF.}$	CR
Spelling	B 4129	10.89	.04			
	G 4919	12.06	.04	1.37	.2838	4.84
Music	B 3582	9.22	.01			
	G 4895	12.00	.04	2.78	.2836	12.45
Arithmetic	B 3506	9.08	.01	.55	.1414	3.89
	G 3481	8.53	.01			
Health	B 3838	9.84	.04	.34	.2836	1.52
	G 3917	9.60	.01			
Penman-ship	B 2865	7.69	.01			
	G 3908	9.58	.01	1.89	.1414	13.37
Science	B 3430	8.88	.01	1.44	.1414	13.72
	G 2852	6.94	.01			
Language	B 1961	6.08	.01			
	G 2870	7.04	.01	1.96	.1414	13.86
History	B 2384	6.17	.01	1.80	.1414	10.61
	G 1904	4.87	.01			
Geography	B 1886	4.81	.01	1.38	.1414	9.65
	G 1450	3.66	.01			
Social Studies	B 1604	4.15	.01	1.31	.1414	9.26
	G 1157	2.84	.01			

In Table VII there are ten critical ratios that are statistically significant.

In art the percent difference of .94 is significant.

The critical ratio of 3.52 shows significance and indicates

that the boys find art easier than the girls.

In reading the percent difference of .07 is not significant. The critical ratio of .25 shows that there are 20 chances in 100 that this is a true difference in favor of the boys finding reading easier than the girls.

In spelling the percent difference of 1.37 is significant. The critical ratio of 4.84 shows significance and indicates that the girls find spelling easier than the boys.

In music the percent difference of 2.78 is significant. The critical ratio of 12.43 shows significance and indicates that the girls find music easier than the boys.

In arithmetic the percent difference of .55 is significant. The critical ratio of 3.89 shows significance and indicates that the boys find arithmetic easier than the girls.

In health the percent difference of .34 is not significant. The critical ratio of 1.52 shows that there are 87 chances in 100 that this is a true difference in favor of the boys finding health easier than the girls.

In penmanship the percent difference of 1.89 is significant. The critical ratio of 13.37 shows significance and indicates that the girls find penmanship easier than the boys.

In science the percent difference of 1.94 is significant. The critical ratio of 13.72 shows significance and indicates that the boys find science easier than the girls.

In language the percent difference of 1.96 is sig-

that the boys find art easier than the girls.

In reading the percent difference of .07 is not significant. The critical ratio of .25 shows that there are 20 chances in 100 that this is a true difference in favor of the boys finding reading easier than the girls.

In spelling the percent difference of 1.37 is significant. The critical ratio of 4.84 shows significance and indicates that the girls find spelling easier than the boys.

In music the percent difference of 2.78 is significant. The critical ratio of 12.43 shows significance and indicates that the girls find music easier than the boys.

In arithmetic the percent difference of .55 is significant. The critical ratio of 3.89 shows significance and indicates that the boys find arithmetic easier than the girls.

In health the percent difference of .34 is not significant. The critical ratio of 1.52 shows that there are 87 chances in 100 that this is a true difference in favor of the boys finding health easier than the girls.

In penmanship the percent difference of 1.89 is significant. The critical ratio of 13.37 shows significance and indicates that the girls find penmanship easier than the boys.

In science the percent difference of 1.94 is significant. The critical ratio of 13.72 shows significance and indicates that the boys find science easier than the girls.

In language the percent difference of 1.96 is sig-

nificant. The critical ratio of 13.86 shows significance and indicates that the girls find language easier than the boys.

In history the percent difference of 1.50 is significant. The critical ratio of 10.61 shows significance and indicates that the boys find history easier than the girls.

In geography the percent difference of 1.35 is significant. The critical ratio of 9.55 shows significance and indicates that the boys find geography easier than the girls.

In social studies the percent difference of 1.31 is significant. The critical ratio of 9.26 shows significance and indicates that the boys find the social studies easier than the girls.

TABLE VIII

CRITICAL RATIOS BETWEEN THE PERCENTAGES OF BOYS AND GIRLS EVALUATING WELL-LIKED SUBJECTS AS HARD IN DIFFICULTY

Subject	Number	Per cent	SE^2	Per cent DIFF.	SE DIFF.	CR
Art	B 378	9.65	.25			
	G 428	13.92	.36	4.27	.7810	5.47
Reading	B 343	8.76	.25	1.64	.7071	2.32
	G 219	7.12	.25			
Spelling	B 382	9.75	.25	2.69	.7071	3.81
	G 217	7.06	.25			

nificant. The critical ratio of 13.88 shows significance and indicates that the girls find language easier than the boys.

In history the percent difference of 1.80 is significant. The critical ratio of 10.81 shows significance and indicates that the boys find history easier than the girls.

In geography the percent difference of 1.55 is significant. The critical ratio of 9.85 shows significance and indicates that the boys find geography easier than the girls.

In social studies the percent difference of 1.31 is significant. The critical ratio of 9.25 shows significance and indicates that the boys find the social studies easier than the girls.

TABLE VIII

CRITICAL RATIOS BETWEEN THE PERCENTAGES OF BOYS AND GIRLS EVALUATING WELL-LIKED SUBJECTS AS HARD IN DIFFICULTY

Subject	Number	Per cent	ER_{PS}	Per cent DIFF.	SE DIFF.	CR
Art	B 378	9.65	.25			
	G 428	13.02	.36	4.27	.7510	5.47
Reading	B 343	8.76	.25	1.84	.7071	2.32
	G 319	7.12	.25			
Spelling	B 382	9.76	.25	2.69	.7071	3.81
	G 317	7.08	.25			

TABLE VIII
(concluded)

Subject	Number	Per cent	SE^2	Per cent DIFF.	SE DIFF.	CR
Music	B 326	8.32	.16	.09	.6403	.14
	G 253	8.23	.25			
Arithmetic	B 578	14.76	.36			
	G 524	17.04	.49	2.28	.9219	2.47
Health	B 215	5.49	.09	1.62	.5000	3.24
	G 119	3.87	.16			
Penmanship	B 322	8.22	.16	.64	.6403	.99
	G 233	7.58	.25			
Science	B 275	7.02	.16			
	G 232	7.54	.25	.52	.6403	.81
Language	B 278	7.10	.16	1.28	.5656	2.26
	G 179	5.82	.16			
History	B 277	7.07	.16			
	G 236	7.67	.25	.60	.6403	.94
Geography	B 327	8.35	.16	.15	.6403	.23
	G 252	8.20	.25			
Social Studies	B 216	5.51	.16			
	G 183	5.95	.16	.44	.5656	.78

In Table VIII there are only three critical ratios that are statistically significant.

In art the percent difference of 4.27 is significant. The critical ratio of 5.47 shows significance and indicates that girls find art harder than boys.

TABLE VIII
(concluded)

Subject	Number	Per cent	SE_D	Per cent DIFF.	DIFF.	CR
Music	B 226	8.32	.16	.09	.6403	.14
	G 263	8.25	.25			
Arithmetic	B 278	14.76	.36			
	G 224	17.04	.49	2.28	.9219	3.47
Health	B 215	5.49	.09	1.62	.5000	3.24
	G 119	5.87	.16			
Penmanship	B 222	8.22	.16	.64	.6403	.09
	G 235	7.58	.25			
Science	B 275	7.02	.16			
	G 232	7.54	.25	.52	.6403	.81
Language	B 279	7.10	.16	1.28	.5556	2.26
	G 179	5.82	.16			
History	B 277	7.07	.16			
	G 236	7.67	.25	.60	.6403	.94
Geography	B 267	8.55	.16	.15	.6403	.23
	G 262	8.20	.25			
Social Studies	B 216	5.51	.16			
	G 183	5.95	.16	.44	.5556	.78

In Table VIII there are only three critical ratios that are statistically significant.

In art the percent difference of 4.27 is significant. The critical ratio of 3.47 shows significance and indicates that girls find art harder than boys.

In reading the percent difference of 1.64 is not significant. The critical ratio of 2.32 shows that there are 98 chances in 100 that this is a true difference in favor of the boys finding reading harder than the girls.

In spelling the percent difference of 2.69 is significant. The critical ratio of 3.81 shows significance and indicates that the boys find spelling harder than the girls.

In music the percent difference of .09 is not significant. The critical ratio of .14 shows that there are 11 chances in 100 that this is a true difference in favor of the boys finding music harder than the girls.

In arithmetic the percent difference of 2.28 is not significant. The critical ratio of 2.47 shows that there are 99 chances in 100 that this is a true difference in favor of the girls finding arithmetic harder than the boys.

In health the percent difference of 1.62 is significant. The critical ratio of 3.24 shows significance and indicates that the boys find health harder than the girls.

In penmanship the percent difference of .64 is not significant. The critical ratio of .99 shows that there are 68 chances in 100 that this is a true difference in favor of the boys finding penmanship harder than the girls.

In science the percent difference of .52 is not significant. The critical ratio of .81 shows that there are 58 chances in 100 that this is a true difference in favor of

In reading the percent difference of 1.64 is not significant. The critical ratio of 2.58 shows that there are 98 chances in 100 that this is a true difference in favor of the boys finding reading harder than the girls.

In spelling the percent difference of 2.59 is significant. The critical ratio of 3.81 shows significance and indicates that the boys find spelling harder than the girls.

In music the percent difference of .09 is not significant. The critical ratio of .14 shows that there are 11 chances in 100 that this is a true difference in favor of the boys finding music harder than the girls.

In arithmetic the percent difference of 2.88 is not significant. The critical ratio of 2.47 shows that there are 99 chances in 100 that this is a true difference in favor of the girls finding arithmetic harder than the boys.

In health the percent difference of 1.62 is significant. The critical ratio of 2.24 shows significance and indicates that the boys find health harder than the girls.

In penmanship the percent difference of .64 is not significant. The critical ratio of .98 shows that there are 98 chances in 100 that this is a true difference in favor of the boys finding penmanship harder than the girls.

In science the percent difference of .62 is not significant. The critical ratio of .81 shows that there are 98 chances in 100 that this is a true difference in favor of

the girls finding science harder than the girls.

In language the percent difference of 1.28 is not significant. The critical ratio of 2.26 shows that there are 98 chances in 100 that this is a true difference in favor of the boys finding language harder than the girls.

In history the percent difference of .60 is not significant. The critical ratio of .94 shows that there are 65 chances in 100 that this is a true difference in favor of the girls finding history harder than the boys.

In geography the percent difference of .15 is not significant. The critical ratio of .23 shows that there are 18 chances in 100 that this is a true difference in favor of the boys finding geography harder than the girls.

In social studies the percent difference of .44 is not significant. The critical ratio of .78 shows that there are 56 chances in 100 that this is a true difference in favor of the girls finding social studies harder than the boys.

Conclusions. The conclusions for the study on children's evaluation of the difficulty of well-liked school subjects have been put into the three charts that follow.

Chart I shows that there is a true difference between boys and girls in their liking of school subjects. Boys like arithmetic, science, history, geography, and the social studies more than girls do, while girls like spelling, music,

the girls finding science harder than the girls.

In language the percent difference of 1.88 is not significant. The critical ratio of 2.25 shows that there are 98 chances in 100 that this is a true difference in favor of the boys finding language harder than the girls.

In history the percent difference of .80 is not significant. The critical ratio of .94 shows that there are 85 chances in 100 that this is a true difference in favor of the girls finding history harder than the boys.

In geography the percent difference of .15 is not significant. The critical ratio of .23 shows that there are 18 chances in 100 that this is a true difference in favor of the boys finding geography harder than the girls.

In social studies the percent difference of .44 is not significant. The critical ratio of .78 shows that there are 56 chances in 100 that this is a true difference in favor of the girls finding social studies harder than the boys.

Conclusions. The conclusions for the study on children's evaluation of the difficulty of well-liked school subjects have been put into the three charts that follow.

Chart I shows that there is a true difference between boys and girls in their liking of school subjects. Boys like arithmetic, science, history, geography, and the social studies more than girls do, while girls like spelling, music,

penmanship, and language better than boys do.

Chart II shows that boys find art, arithmetic, science, history, geography, and the social studies easier in difficulty than girls do, but that girls find spelling, music, penmanship, and language easier in difficulty than do the boys. Note the similarity in those subjects found easy and those subjects best liked as given in Chart I.

Chart III shows that boys find spelling and health harder in difficulty than girls do, but that girls find art harder than boys do. It will be seen that while there are significant differences between boys and girls in ten subjects that one or the other group finds easier, there are only three subjects judged hard in difficulty which show significant differences between boys and girls.

CHART I
(From Table VI)

COMPARISON OF PREFERENCES FOR WELL-LIKED SUBJECTS

Critical Ratio	Boys Favored	Girls Favored
3.00 or more	Arithmetic Science History Geography Social Studies	Spelling Music Penmanship Language
2.99 to 2.00	Health	none

permanship, and language better than boys do.

Chart II shows that boys find art, arithmetic, science, history, geography, and the social studies easier in difficulty than girls do, but that girls find spelling, music, permanship, and language easier in difficulty than do the boys. Note the similarity in those subjects found easy and those subjects best liked as given in Chart I.

Chart III shows that boys find spelling and health harder in difficulty than girls do, but that girls find art harder than boys do. It will be seen that while there are significant differences between boys and girls in ten subjects that one or the other group finds easier, there are only three subjects judged hard in difficulty which show significant differences between boys and girls.

CHART I
(From Table VI)

COMPARISON OF PREFERENCES FOR WELL-LIKED SUBJECTS

Critical Ratio	Boys Favored	Girls Favored
3.00 or more	Arithmetic Science History Geography Social Studies	Spelling Music Penmanship Language
2.99 to 2.00	Health	none

CHART I
(concluded)

Critical Ratio	Boys Favored	Girls Favored
1.99 to 1.00	Art	none
.99 and below	Reading	none

CHART II
(From Table VII)

COMPARISON OF PREFERENCES FOR WELL-LIKED SUBJECTS EVALUATED AS EASY IN DIFFICULTY

Critical Ratio	Boys Favored	Girls Favored
3.00 or more	Art Arithmetic Science History Geography Social Studies	Spelling Music Penmanship Language
2.99 to 2.00	none	none
1.99 to 1.00	Health	none

CHART I
(concluded)

Critical Ratio	Boys Favored	Girls Favored
1.99 to 1.00	Art	none
.99 and below	Reading	none

CHART II
(From Table VII)

COMPARISON OF PREFERENCES FOR WELL-LIKED SUBJECTS EVALUATED AS EASY IN DIFFICULTY

Critical Ratio	Boys Favored	Girls Favored
3.00 or more	Art Arithmetic Science History Geography Social Studies	Spelling Music Penmanship Language
2.99 to 2.00	none	none
1.99 to 1.00	Health	none

CHART II
(concluded)

Critical Ratio	Boys Favored	Girls Favored
.99 and below	Reading	none

CHART III
(From Table VIII)

COMPARISON OF PREFERENCES FOR WELL-LIKED SUBJECTS EVALUATED AS HARD IN DIFFICULTY

Critical Ratio	Boys Favored	Girls Favored
3.00 or more	Spelling Health	Art
2.99 to 2.00	Language Reading	Arithmetic
1.99 to 1.00	none	none
.99 and below	Geography Music Penmanship	Social Studies History Science

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CHART II
(concluded)

Critical Ratio	Boys Favored	Girls Favored
.39 and below	Reading	none

CHART III
(From Table VIII)

COMPARISON OF PREFERENCES FOR WELL-LIKED SUBJECTS EVALUATED AS HARD IN DIFFICULTY

Critical Ratio	Boys Favored	Girls Favored
3.00 or more	Spelling Health	Art
2.39 to 2.00	Language Reading	Arithmetic
1.39 to 1.00	none	none
.39 and below	Geography Music Penmanship	Social Studies History Science

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